

to propagation of the wave in the protected unit can be modeled by means of a propagation function, the processing module being configured to:

- determine a first travelling wave current in the first position and a second travelling wave current in the second position;

- determine a first travelling wave differential current based on a comparison between the determined first travelling wave current or the second travelling wave current and an estimation of the first travelling wave current or the second travelling wave current, respectively;

- estimate the first travelling wave current or the second travelling wave current by applying the propagation function to the second travelling wave current or to the first travelling wave current, respectively, wherein the first travelling wave differential current has a plurality of modes corresponding to respective ones of the plurality of conductors; and

- determine a second travelling wave differential current by means of, based on the propagation function, adjustment of at least one of magnitude and phase of the first travelling wave differential current such that all modes attain equal or increasingly equal modal characteristics.

13. The processing module according to claim **12**, wherein the processing module is configured to receive the first travelling wave current and the second travelling wave current from a travelling wave current sensing module included in the power system configured to determine a first travelling wave current in the first position and a second travelling wave current in the second position, whereby the first travelling wave current and the second travelling wave current are determined by the processing module by receipt of first travelling wave current and the second travelling wave current from the travelling wave current sensing module.

14. The processing module according to claim **12**, wherein the processing module is configured to determine a third travelling wave differential current based on a combination of the first travelling wave differential current and the second travelling wave differential current.

15. The processing module according to claim **14**, wherein each of the first travelling wave differential current and the second travelling wave differential current comprises a plurality of elements, and wherein the processing module is configured to determine the third travelling wave differential current by means of element-by-element multiplication of the first travelling wave differential current and the second travelling wave differential current.

16. A fault sensing system for a power system including a protected unit adapted to convey power from a first position in the protected unit to a second position, different from the first position, in the protected unit, or vice versa, via a plurality of conductors, wherein on a condition that a fault occurs in the protected unit at least one travelling wave is generated in the protected unit, wherein the fault sensing system is adapted to sense a fault in the protected unit, the fault sensing system comprising:

- the processing module according to claim **12**,

- wherein a second travelling wave differential current as determined by the processing module has a plurality of elements, each element corresponding to a respective one of the plurality of conductors, and

- wherein the fault sensing system is configured to compare at least some of the elements of the second travelling

- wave differential current with respect to a fault sensing criterion, and on a condition that an element complies with the fault sensing criterion, determine that there is a fault in the conductor corresponding to that element.

17. The fault sensing system according to claim **16**, wherein the processing module is configured to determine a third travelling wave differential current based on a combination of the first travelling wave differential current and the second travelling wave differential current, and

- wherein the third travelling wave differential current as determined by the processing module has a plurality of elements, each element corresponding to a respective one of the plurality of conductors, the fault sensing system being configured to assess at least some of the elements of the third travelling wave differential current with respect to a fault sensing criterion, and on a condition that an element complies with the fault sensing criterion, determine that there is a fault in the conductor corresponding to that element.

18. The fault sensing system according to claim **17**, wherein the fault sensing system is configured to exclude any element of the third travelling wave differential current which has a negative value in the assessment of at least some of the elements of the third travelling wave differential current.

19. A power system comprising:

- a protected unit adapted to convey power from a first position in the protected unit to a second position, different from the first position, in the protected unit, or vice versa, via a plurality of conductors; and
- the processing module according to claim **12**.

20. The power system according to claim **19**, further comprising:

- a fault sensing system for a power system including a protected unit adapted to convey power from a first position in the protected unit to a second position, different from the first position, in the protected unit, or vice versa, via a plurality of conductors, wherein on a condition that a fault occurs in the protected unit at least one travelling wave is generated in the protected unit, wherein the fault sensing system is adapted to sense a fault in the protected unit, the fault sensing system comprising said processing module,

- wherein a second travelling wave differential current as determined by the processing module has a plurality of elements, each element corresponding to a respective one of the plurality of conductors, and

- wherein the fault sensing system is configured to compare at least some of the elements of the second travelling wave differential current with respect to a fault sensing criterion, and on a condition that an element complies with the fault sensing criterion, determine that there is a fault in the conductor corresponding to that element.

21. (canceled)

22. A non-transitory computer-readable storage medium on which there is stored a computer program product configured to, when executed in the processing module according to claim **12**, perform a method in a power system including a protected unit adapted to convey power from a first position in the protected unit to a second position, different from the first position, in the protected unit, or vice versa, via a plurality of conductors, wherein on a condition that a fault occurs in the protected unit, at least one travelling wave is generated in the protected unit, wherein any distur-